ILLEGIB

TCS 8198-64
16 September 1964

COPY   7

MEMORANDUM FOR: Chief, Military Economic Division, ORR/CIA

ATTENTION: ████████████████ 25X1A

THROUGH: Chief, Reconnaissance Group
DD/I Collection Guidance

SUBJECT: Submarine Identifications on KEYHOLE Photography

REFERENCES: A.   C-RR4-81,746 (Joint Project HPIC No.
   B.   C-RR4-81,746 (Supplement 1) (Joint Project No. N-826/64)

1.   In response to requirement No. C-RR4-81,746 and supplement (Joint Project No. N-826/64) as amended, enclosure is forwarded herewith.

2.   Discussions held subsequent to initiation of the project and a need to establish whether or not the EK original positive material utilized during the OAK at HPIC and distributed to other agencies could be significantly improved by further utilization of the original negative. A detailed investigation into this matter was conducted as follows:

25X1D

A.   Contact dup positives and 20x film enlargements were obtained from the original negative on all cloud-free ████ coverages of Severodvinsk, and Litsa Guba.

B.   Highest quality reproductions with exposure controlled for greatest detail on submarines in the water were specified.

C.   The materials thus obtained were carefully compared with original dup positives (materials utilized during the OAK) for any significant change in the submarine imagery.

No improvement in photographic detail on submarine imagery was detectable when compared with original ████ positive materials.

25X1D   25X1A

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TCS 8198-64
16 September 1964

SUBJECT: Submarine Identifications of KEHOLE Photography

Enclosure:
   Submarine Identifications on
   KEYHOLE Photography at Severodvinsk
   and Litsa Guba

Distribution:
   Cys 1 & 2 - Ch/MED, ORR/CIA w/encl.
           3 - CGS/Recce/R w/o encl
           4 - CIA/PID (NPIC) w/o encl
           5 - GS/NPIC w/o encl
           6 - DIAXX-4 w/o encl
           7 - CSD/NPIC w/encl
           8 - PAG/NPIC w/o encl
           9 - PAG/IPO/NPIC w/o encl
          10 - GMD/PAG/NPIC w/o encl
          11 - AF/TCO w/o encl
          12 - NSA/LO/NPIC w/o encl
          13 - OPNAV 922Y3 Attn: ███████████████ 25X1A
          14 - DIAXX 2 Attn: ███████████████ 25X1A
          15 - Army/SPAD Attn ███████████████ 25X1A

PRE-RELEASE OF PROJECT N-826/64

1.   Identification of submarines by class on KEYHOLE photography is inherently difficult and is dependent upon several interlocking factors pertaining, in large part, to the mechanics of the camera systems utilized, the light and atmospheric environment, and the nature of the specific imagery involved.

25X1B

B.   KEYHOLE photography of locations above 60°N is of marginal quality at best during all but the summer months due to the low sun angle at those latitudes.

C.   KH-4 imagery has been optimized to a point where, under ideal conditions, it is feasible to recognize certain submarine characteristics - and to establish measurement criteria.

25X1D

2.   The NPIC Photo Analysis Group is charged with the responsibility for immediate read-outs and back-up reports pertaining to the status of Soviet naval facilities and naval order of battle as imaged on overhead photography. NPIC is not charged with a requirement to provide detailed characteristics of a technical nature on Soviet naval vessels.

A.   Size and characteristics information utilized by NPIC has been dependent upon values published by ONI/NRTSC.

B.   ONI/NRTSC figures on submarine lengths by class have changed significantly in the period 1963 - 1964. The following table reflects these changes:

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ONI/NRTSC FIGURES BY YEAR

25X1D 25X1D

CLASS	1963	1964
E-I	385	370
E-II	385	370
H	365	365
H-II	-	
N	330	
N-II	-	

It will be noted that whereas previously submarine classes could be readily differentiated by class on the basis of dimensional evidence, the number of classes now carried in the ▮▮▮▮▮ 25X1D range make such identification by class extremely hazardous in the absence of additional information. It should be further noted

25X1D that visible hull imagery of Soviet "H" Class SSBN's has never exceeded 350 ft ▮▮▮▮▮▮▮▮▮▮▮ Only when utilizing optimimum viewing and processing conditions has it been possible to include the shadow cast by the stern as a part of the length over-all (approximately 365 ft) of this vessel.

3.   The metrical analysis approach to the identification of submarine imagery on KEYHOLE photography is complicated by the problem of determining the end-points on submarine hulls. Regardless of how good either scaling data or orbital data is, it is often most difficult to arrive at a consensus among PI's as to a determination of precise end-points on submarine hull imagery. Seldom are there finite submarine end-points visible on KH-4 due primarily to the low contrast factor between a dark-hulled submarine and the surrounding water. In addition the high atmospheric moisture content usually prevalent along coastal areas tends to further degrade both the constrast level and the resolution of the photography. The resolution capability of the camera system is probably among the less notable limiting factors inherent to submarine classification. On KH-4 photography, under optimimum conditions, it is considered that the accuracy of metrical analysis upon submarine imagery is plus or minus 10 feet for length over-all values.

25X1D

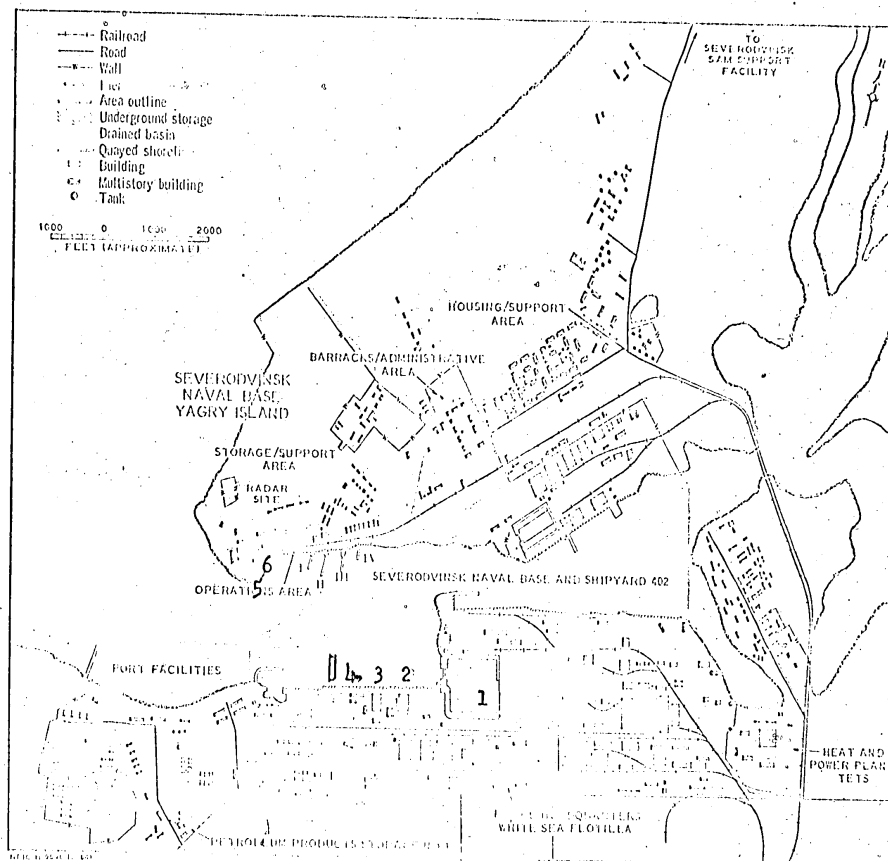S-14508

25X1D

Next 1 Page(s) In Document Exempt

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25X1D

Legend
- ┼─┼─ Railroad
- ─── Road
- ─x─ Wall
- ·· Pier
- ─── Area outline
- Underground storage
- Drained basin
- Quayed shoreline
- Building
- Multistory building
- ○ Tank

1000   0   1000   2000
FEET (APPROXIMATE)

SEVERODVINSK
NAVAL BASE,
YAGRY ISLAND

TO
SEVERODVINSK
SAM SUPPORT
FACILITY

HOUSING/SUPPORT
AREA

BARRACKS/ADMINISTRATIVE
AREA

STORAGE/SUPPORT
AREA

RADAR
SITE

OPERATIONS AREA

SEVERODVINSK NAVAL BASE AND SHIPYARD 402

PORT FACILITIES

HEAT AND
POWER PLANT
TETS

HEADQUARTERS
WHITE SEA FLOTILLA

PETROLEUM PRODUCTS STORAGE AREA

FIGURE 2. SEVERODVINSK NAVAL BASE, YAGRY ISLAND, USSR.

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25X1D

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Item Number	Remarks
Covered building way	1240' known.
1. Probable E SS on cradle	Min does not include white object. Max includes white object.
2. U/I SS	Very poor imagery. Very poor end points.
3. E SSGN	Athwartship lines similar to SSG configuration pointed bow and stern. Flat deck.
4. U/I SS	Very marginal imagery.
5. U/I SS	Poor end-points.
6. U/I SS	Max value - very soft imagery.
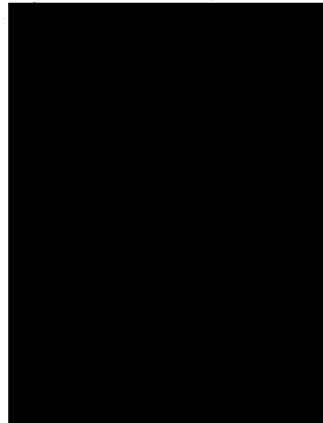
25X1D
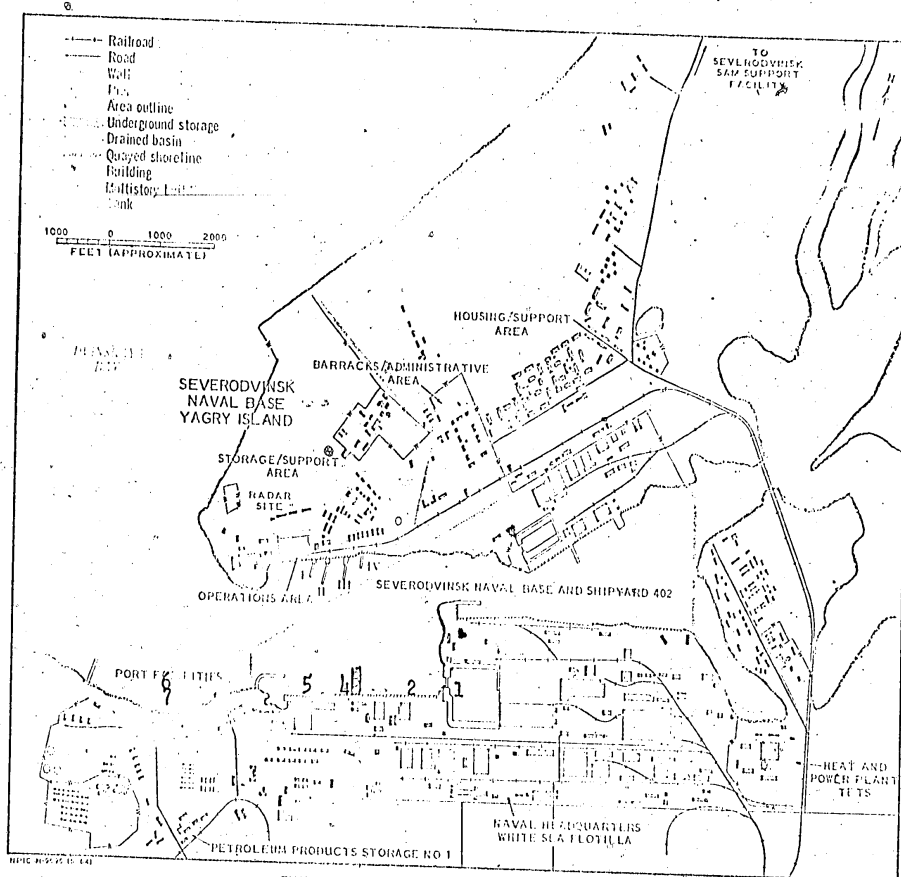
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Railroad
Road
Wall
Pier
Area outline
Underground storage
Drained basin
Quayed shoreline
Building
Multistory building
Tank

1000   0   1000   2000
FEET (APPROXIMATE)

TO
SEVERODVINSK
SAM SUPPORT
FACILITY

25X1D

HOUSING/SUPPORT
AREA

BARRACKS/ADMINISTRATIVE
AREA

SEVERODVINSK
NAVAL BASE
YAGRY ISLAND

STORAGE/SUPPORT
AREA

RADAR
SITE

SEVERODVINSK NAVAL BASE AND SHIPYARD 402

OPERATIONS AREA

PORT FACILITIES

5   4   3   2   1

HEAT AND
POWER PLANT
TLTS

NAVAL HEADQUARTERS
WHITE SEA FLOTILLA

PETROLEUM PRODUCTS STORAGE NO 1

FIGURE 2. SEVERODVINSK NAVAL BASE YAGRY ISLAND, USSR.

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25X1D

25X1D

Item Number		Remarks

Covered building way

1. U/I SS in basin   Rectangular deck inter-
ruptions appear to equate
to SSG configurations.

2. U/I SS   Very poor imagery.
3. - U/I SS in drydock   No break in vessel noted.
White object appears sus-
pended over end of sub-
marine.

4. SS along pier by drydock   Stern very indistinct.
5. Possible U/I SS   Imagery too soft to be
measured monoscopically.

6. 2 possible GM   Poor imagery on end points
7. SS by port facility   - length over-all is of
discernable length only
segmented appearance
suggests SSG configuration.

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TOP SECRET RUFF

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Legend

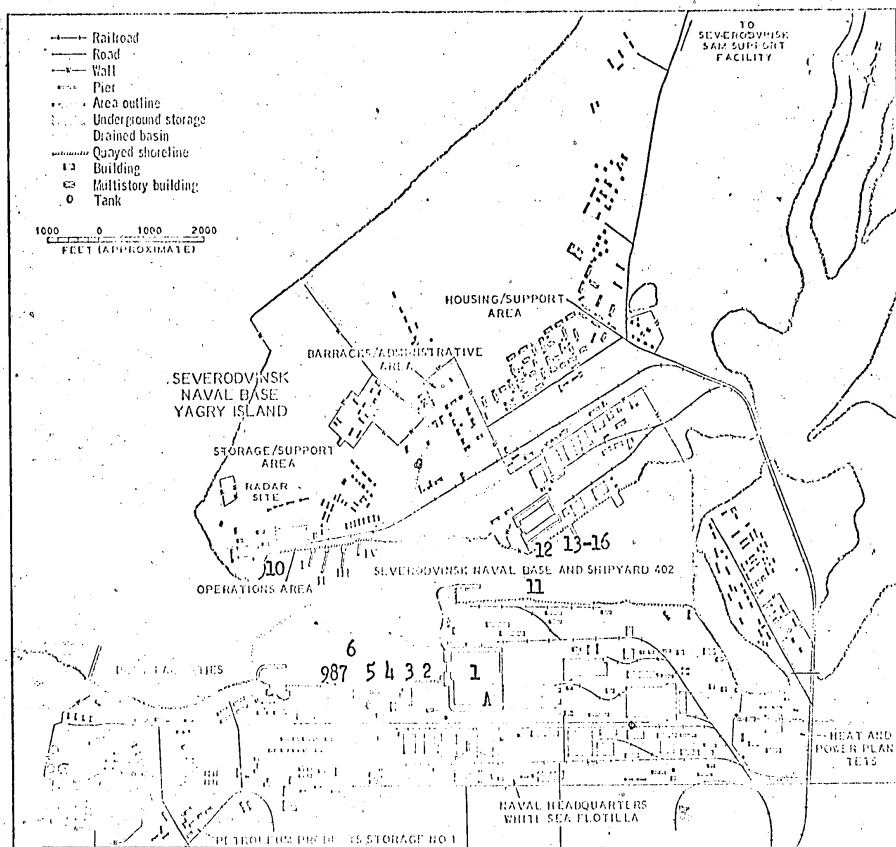- —+— Railroad
- ——— Road
- —×— Wall
- •—•—• Pier
- •—••• Area outline
- Underground storage
- Drained basin
- Quayed shoreline
- ▫ Building
- ▱ Multistory building
- ○ Tank

1000 0 1000 2000
FEET (APPROXIMATE)

TO
SEVERODVINSK
SAM SUPPORT
FACILITY

25X1D

HOUSING/SUPPORT
AREA

BARRACKS/ADMINISTRATIVE
AREA

SEVERODVINSK
NAVAL BASE
YAGRY ISLAND

STORAGE/SUPPORT
AREA

RADAR
SITE

12 13-16

10

OPERATIONS AREA

SEVERODVINSK NAVAL BASE AND SHIPYARD 402

11

6
987 5 4 3 2 1

HEAT AND
POWER PLANT

NAVAL HEADQUARTERS
WHITE SEA FLOTILLA

PETROLEUM PRODUCTS STORAGE NO 1

FIGURE 7. SEVERODVINSK NAVAL BASE YAGRY ISLAND, USSR.

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25X1D

25X1D

Item Number		Remarks
Covered Building way		1240' known.
1.	U/I SS	Stern apparently partially obscured. Sail appears large.
2.	U/I SS	Marginal imagery.
3.	Possible E	Athwartship lines interrupting hull indicate possible SSG configuration.
4.	Possible E	Marginal imagery.
5.	U/I SS	Max based on shadow. Min less white blob. No break in vessel noted.
6.	U/I SS	Small sloping sail. Bulbous bow.
7.	Possible N SSN	No characteristics identifiable.
8.	U/I SS	No characteristics identifiable.
9.	U/I SS	Max includes all segments.
10.	Probable U/I SS	Firm imagery - well defined sail.
11.	Possible F/Z	Very poor imagery - barely detectable.
12.	U/I SS	Only second sub outboard from quay is measurable - imagery of remaining 3 subs is very indistinct.
13-16. 4 possible SS		
A	U/I object on cradle	

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WORKING PAPER

NPIC/R-263/64

25X1D
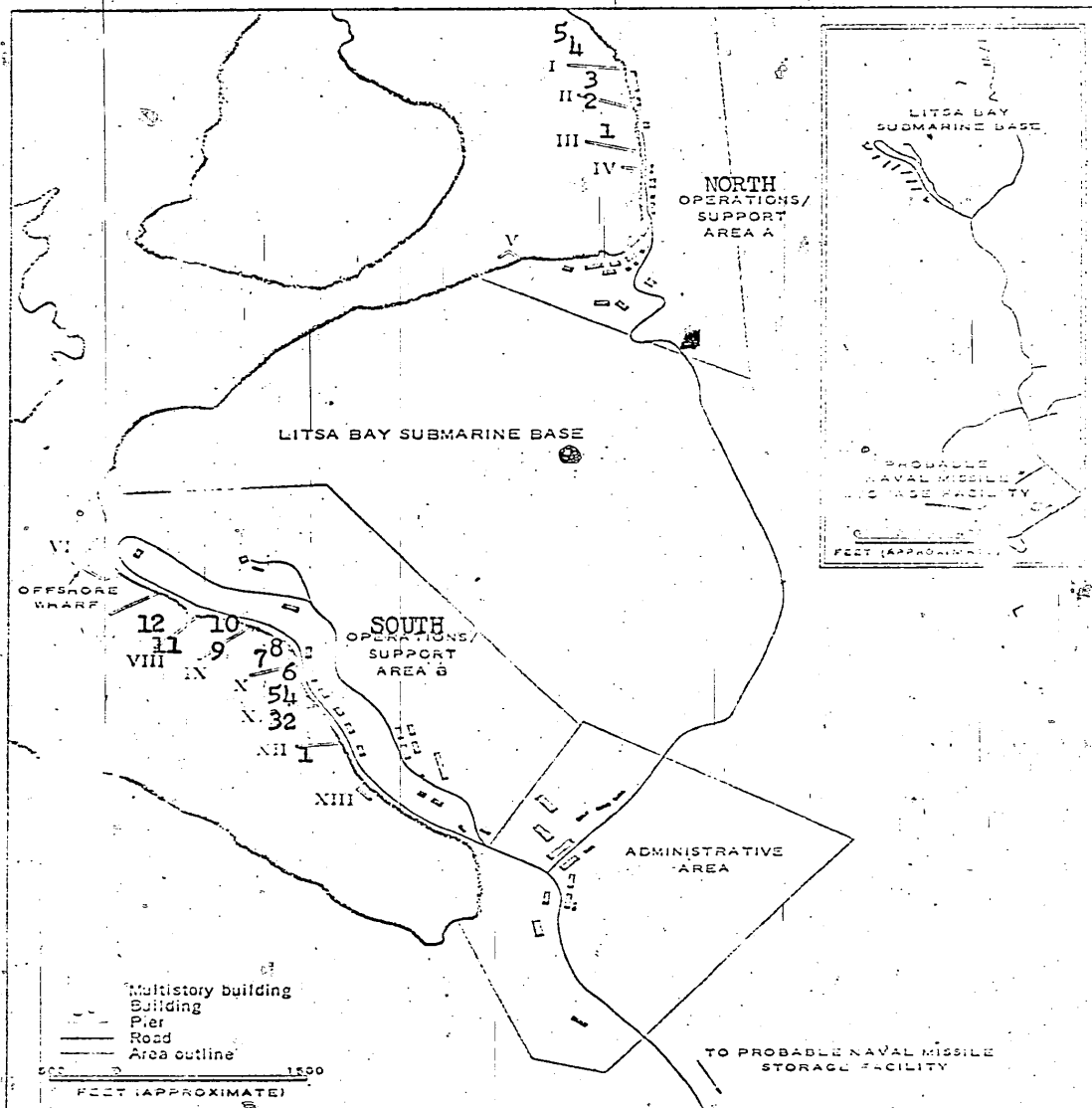
FIGURE 2. LITSA BAY SUBMARINE BASE, USSR.

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25X1D

25X1D

Item Number	North		Remarks

North

Item Number

1. Skoryy DD

2. E Class SSGN
3. E Class SSGN

4. Bolva APL

5. Bolva APL

South

1. N SSN

2. H SSBN
3. H SSBN
4. H SSBN
5. H SSBN
6. N SSN

7. N SSN
8. N SSN
9. Bolva APL

10. Atrek ASL

11. Bolva APL

12. Don AS

Remarks

Stacks, torpedo tube and after superstructure equatable to key transom stern, 395' known. Well defined missile exhaust deflectors. Stern & bow are both pointed - flat decks Double ventilator amidship. Single ventilator forward. Very flat appearance topside lower fantail aft ▮▮▮ known

25X1D

Sail configuration. Max includes white on bow. Min includes visible hull Max includes shadow ballistic missile sail.

Sail/hull configuration Max includes white on bow.

Flat topside appearance. ▮▮▮ known. 25X1D Rectangular after deckhouse. ▮▮▮ known.* 25X1D Flat topside appearance. ▮▮▮ known. 25X1D 460 known. Hull/superstructure configuration. Fwd gun tubs.
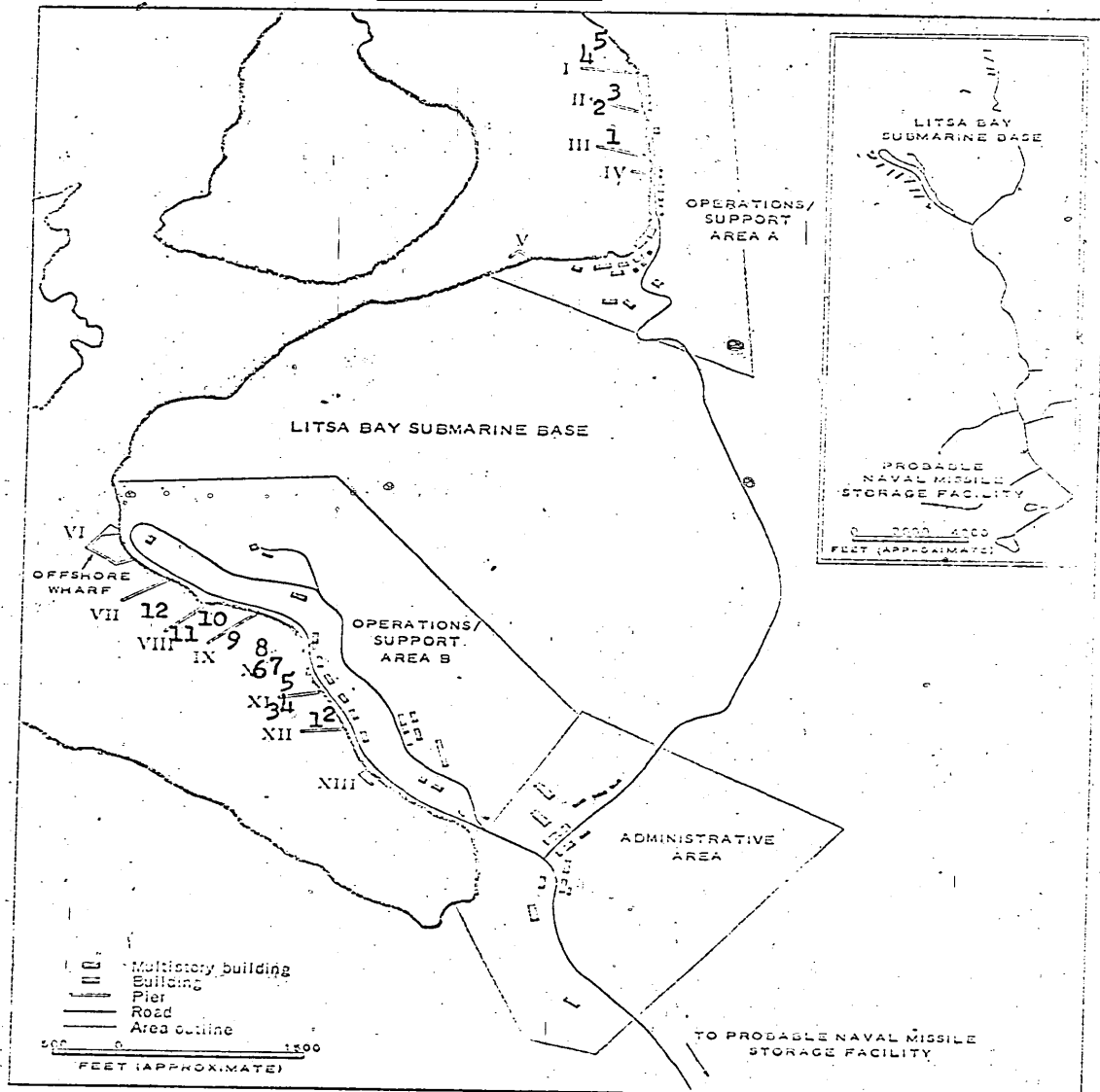
* DIA PC-230/2-1 p. VI-161

NPIC/R-263/64

25X1D

FIGURE 2. LITSA BAY SUBMARINE BASE, USSR.

NPIC M-9552 (4/64)

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TOP SECRET

25X1D

25X1D

Item Number	Remarks

North

1. Skoryy DD — Good imagery, firm end points.
2. E SSGN — Short sail shadow pointed ends - indentation along hull equating to missile compartments.
3. E SSGN — Topside flat. Typical imagery for this class.
4. Bolva APL —
5. Bolva APL —
6. E SSGN — Possible segmentation in deck - probable small sail.

South

1. N SSN — Bulbous nose, tapered stern.
2. N SSN — Bulbous nose, tapered stern.
3. Possible E SSGN — Pointed bow, flat deck, deck unlike adjacent "H" Classes.
4. H SSBN — Large sails. Little taper to bow.
5. H SSBN —
6. N SSN — Bulbous nose. Tapered stern, pronounced parallelism to hull shapes.
7. N SSN —
8. N SSN —
9. Bolva APL — Typical imagery.
10. U/I SS — Forward end-point not well defined.
11. Bolva APL — Typical imagery.
12. Don AS — Typical imagery (superstructure detail similar).

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TOP SECRET